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| 09/963,861 | 09/26/2001 | Michael Frank | ATI.0100580 | 1604 |

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| EXAMINER |
|---|
| DINH, NGOC V |

| ART UNIT | PAPER NUMBER |
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| 2189 | |

DATE MAILED: 07/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>03</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)☒ Responsive to communication(s) filed on <u>28 April 2005</u>.

2a)☒ This action is **FINAL**.    2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *19* is/are allowed.

6)☒ Claim(s) *1-18, 20-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

## Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

## DETAILED ACTION

### *FINAL REJECTION*

1.   This Office Action is responsive to Amendment filed 04/28/05 in which claims 1, 4, 12, 19 and 28 are amended. Claims 2-3, 13-14, 26 are canceled

2.   The text of those applicable sections of Title 35, U.S. Code not included in this action can be found in the prior Office Action.

3.   The rejection are respectfully maintained and incorporated by reference as set forth in the last office action.

4.   Applicant's argument filed 04/28/05 have been fully considered but are not persuasive. In the remark, applicant argued in substance that: with respect to claims 1, 12, 28. Applicant argues that Parks does not teach discarding data received from the first memory device in response to the first notification, wherein the discarded data is associated with the first request. The Examiner respectfully disagrees with Applicant's position. Parks clearly teaches discarding data received from the first memory device in response to the first notification, wherein the discarded data is associated with the first request. Anytime when a request is made, this request is initially searched in both the cache and main memory simultaneously [col. 7, lines 60-65]. If the **data is found** in the cache [**NOTIFICATION** that data is available from the second memory device] [col. 8, lines 1-5], the data need not be retrieved from main memory and the access to memory controller can be cancelled [discarding received data in response to notification above] [col. 8, lines 1-10]. Parks further teaches: " terminating the application of said **physical address** to said main memory controller upon an occurrence of a successful retrieval of said data from said cache memory [col. 12, lines 5-10]. Terminating .. physical address means discarding physical data upon a notification from the controller that physical data is available from the cache memory device.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

5. Claims 1-18, 20-22, 24, 27 are rejected under 35 U.S.C.102 (b) as being anticipated by Parks et al. PN 5325508.

**As per claim 1:**

Parks teaches a method comprising the steps of:

Receiving a first request to access data from a first memory device; preparing the first request for the data for access through the first memory device [e.g., preparing a main memory read request, abstract]; providing a second request to access the data from a second memory device [e.g., performing a cache lookup, abstract], wherein the second request is provided concurrently with the step of preparing the first request [col. 1, lines 30-35;col. 2, lines 5-25; col. 4, lines 28-45].

Parks further teaches terminating the first request [col. 3, lines 35-50; col. 6, lines 1-5]; receiving a first notification that the data associated with the first request is available from the second memory device [e.g., if the higher level cache lookup was successful, then the main memory read command is canceled, col. 3, lines 8-10; col. 3, lines 43-47; col. 7 line 59 to col. 8 line 10; col. 12, lines 5-10].

Parks further teaches:

**Claims 2, 13:**

terminating the first request in a memory controller before the first request is sent to the first memory device [col. 2, lines 45-51].

**Claims 3, 14:**

Parks teaches terminating first request includes terminating data received from the first memory device, wherein the data is associated with the first request [col. 3, lines 35-40].

**Claims 4, 15:**

the data is terminated in a memory controller [col. 3, lines 35-45].

**Claim 5:**

Parks inherently teaches the data in the second memory is coherent with the data in the first memory. This is because when a request is sent to a bus, all other caches will snoop the bus to verify if their data are coherent with main memory data before they sent the data to the requestor.

**Claims 6-7, 24:**

the first memory device is a RAM; the second memory includes cache memory [col. 2, lines 5-25].

**Claims 8-10, 16:**

a memory controller associated with the first memory device terminates the memory request in response to the termination; the first request is generated by a client on a system bus; the memory request includes a multi targets memory request [col. 3, lines 35-45; col. 3, lines 1-5; col. col. 5, lines 40-45; col. 5, lines 58-65].

**Claims 11, 18:**

Parks teaches providing the second/third request to a bus interface unit, wherein the bus interface unit is coupled to the second memory device [38, fig. 5].

**Claim 12:**

Parks teaches the claimed limitation as mentioned above. Parks further teaches: providing, in response to the first request, data from the cache memory when the data stored in the cache memory is coherent with the data stored in the memory device; and providing, in response to the first request, data from the memory device when the data stored in the cache memory is not coherent with the data stored in the memory device [col. 3, lines 8-30; col. 8, lines 44-50].

**Per claim 17:**

The client is a multiple target memory request [col. 7, lines 30-35].

**Claims 20-22:**

bus interface unit further used to:

a) synchronize said cache memory to said memory device [snoop address, col. 8, line 47];

b) determine validity includes determining a coherency between said cache memory and said memory device [[col. 8, line 48]

c) coherency is dependent on whether said memory device has been written to prior to a

synchronization of said cache memory with said memory device.

[col. 3, lines 15-40; col. 8, lines 44-50].

**Per claim 27:**

memory controller to terminate the first request includes terminating data received from

said memory device, wherein said data is associated with said first request [col. 4, lines

50-65].

## *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 23 is rejected under 35 U.S.C 103(a) as being unpatentable over Parks et al, and in

view of Parvin et al PN 6167465.

**Per Claim 23:**

Parks teaches the claimed limitation as noted above.

Parks does not teach bus controller is a PCI.

Parvin teaches a PCI bus controller [16, fig. 2]

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to further include PCI bus controller into Parks's system. Doing so

would allow peripherals to act as bus masters, thus capable of handling more data

(increasing throughput of system) [col. 2, lines 21-25].

7. Claim 25 is rejected under 35 U.S.C 103(a) as being unpatentable over Parks et al, and in

view of Chari PN 6219711.

**Per Claim 25:**

Parks teaches the claimed limitation as noted above.

Parks does not teach:

assign an identifier to each request; and identify a request from a plurality of pending

requests using said first identifier.

Chari teaches:

a method for assigning an identifier to each request; and identify a request from a

plurality of pending requests using said first identifier [col. 2, lines 4-40].

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to further include the teaching of Chari, as mentioned above, into

Parks's system in order to ensure that ensure that the response is matched with the

corresponding request [col. 2, lines 19-28].

### *Allowable Subject Matter*

8. Claim 19 is allowed.

The primary reasons for allowance of claim 19 in the instant application is the combination

with the inclusion of the limitation of " store said second identifier as part of a kill list,

wherein said kill list identifies requested to be terminated, and terminate the first request

based on the kill list".

### *Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

a. Razdan et al PN 6,446,143 discloses minimizing delay instruction retrieval in cache.

Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Ngoc Dinh whose telephone number is (571) 272-4191. The examiner can

normally be reached on Monday-Friday 8:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,
Donald A. Sparks, can be reached on (571) 272-4201. The fax phone numbers for the
organization where this application or proceeding is assigned are (703) 746-7239 (571) 272-
2100 for regular communications and (703) 746-7238 for After Final communications.
Any inquiry of a general nature or relating to the status of this application or proceeding should
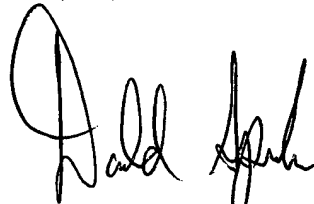be directed to the receptionist whose telephone number is (571) 272-2100.

NGOC DINH

Patent Examiner

ART UNIT 2189

July 1, 2005

DONALD SPARKS
SUPERVISORY PATENT EXAMINER